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^{a7} PATCH SYSTEM KIT AND METHOD FOR REPAIRING A SURFACE BREAK IN
2 SELECTED SURFACES OF A TRANSPARENT OBJECT

3 ^{ins a2} Background of the Invention

4 The present invention relates to a patch system kit and method
5 for repairing in situ a surface break in selected surfaces of an
6 transparent object particularly an automobile lense or lightbulb
7 housing.

8 Automobile light bulbs are oftentimes engaged in complex,
9 expensive, enclosed housings protected by light bulb housings and
10 lenses. The automobile bulb housings and lenses serve as light
11 diffuser and protect the bulb from the atmosphere.

12 A break in a lens or housing must be repaired or there is the
13 expense of replacing them. Effective repair of a lens or
14 automobile light bulb housing having a light diffuser has been
15 difficult.

16 Breaks have been difficult to access because of the shape of
17 the break or the housing. The broken area may be colored and it
18 may be difficult to restore the diffusive characteristics of the
19 repaired area.

20 Oftentimes the only way to effect a repair includes to need to
21 physically remove the lens or automobile light bulb housing.
22 Another problem to be solved in the repair of automobile light
23 bulb housings lens is the need to maintain the light diffusing

1 characteristics of the lens once repaired. Repair of lenses in the
2 past had many similarities to the repair of breaks through glass
3 or plastic.

4 Description of the Related Art

5 In the past, automobile light bulb housings and plastic lenses
6 have been repaired by covering the housings with tape just to
7 protect them from the atmosphere.

8 The tape has been either opaque or translucent. Tapes used in
9 such repair have even been selected to match the color of the
10 broken part of the lens. To repair voids, repairs have been made
11 by the flush filling of the broken spaces; plastic castings were
12 also made to fill breaks. Many different techniques were used.

13 U.S. Patent No. 4,497,755 discloses a kit for the repair of
14 automobile light bulb housing lenses by casting the repair. The
15 repair method includes the use of flush tapes to form a
16 releasable form for molding an exothermic adhesive resin to make
17 a repair. Colored resin was used to match colors in the
18 automobile plastic light bulb housing and glass bead were used
19 to simulate the facets in the broken diffuse area.

20 As shown in U.S Patent No. 5,401,152, breaks through glass
21 have been repaired by providing a gasket with a cover to form a
22 mold for a casting including a bead surrounding a repaired area.
23 The gasket and cover define the shape of the repair casting.

1 U.S. Patent No. 4,200,478 discloses a pedestal adapted to
2 create a casting to override and surround a break in glass.

3 U.S. Patent No. 3,887,413 discloses a method for repairing
4 plastic materials, using an insert backing material, protective
5 paste and graining paper and uses a hot surface, such as iron.

6 U.S. Patent No. 3,772,114 discloses a process for mending
7 fabrics, including the use of an adhesive which contains a color
8 additive to match the area around the repair. The invention is
9 involved with fitting in a flush patch supported on one side.

10 U.S. Patent No. 3,388,016 discloses a method and apparatus
11 for patching articles. The method and apparatus are a complex
12 set to apply a fiber glass patch to one surface. Flush liners
13 may be used.

14 U.S. Patent No. 3,109,765 discloses a method for repairing
15 surfaces, wherein a textured backing is used. A textured backing
16 hold holds a composition applied from an outer surface of a
17 rupture.

18 U.S. Patent No. 4,961,883 discloses a pedestal and a seal
19 surrounding an opening and forming a chamber for the
20 introduction of a repair plastic forming an irregular bead,
21 which has to be cut off flush. The bead is formed in the central
22 opening 20.

23 U.S. Patent No. 4,473,419 discloses the use of a flush patch

1 to a contoured surface for the purpose of making a repair.

2 U.S. Patent No. 3,138,505 discloses means for mending fabric,
3 using a heat responsive thermoplastic adhesive backed by a
4 substrate which may be stripped, then bonding a matching patch
5 to the fabric and the adhesive. The patch is ironed on.

6 U.S. Patent No. 3,841,932 discloses a surface patch for
7 windshield glass, which leaves a superficial dam which is
8 removed.

9 U.S. Patent No. 3,914,145 discloses a flush patch casting for
10 the repair of plate glass.

11 U.S. Patent Number 4,147,576 is a substantially invisible non
12 transparent auto body repair over a damaged area.

13 U.S. Patent Number 4,094,316 is a decorative applique overlay
14 adherable to bandage.

15 U.S. Patent Number 4,588,619 is a reflective panel for
16 diffusion of light in an automotive lens housing.

17 U.S. Patent Number 4,221,465 is a patching tape to alter the
18 light transmissive characteristics of a viewgraph.

19 U.S. Patent Number 4,661,182 is a non transparent
20 substantially invisible surface repair of a damaged glossy
21 surface of an auto body.

22 U.S. Patent Number 2,8338,327 is a laminated tire patch with
23 an adhesive layer.

1 U.S. Patent Number 3,939,337 is an elastomeric gasket for a
2 light housing assembly for mounting a lens.

3 Summary of the Invention

4 According to the present invention, a kit and method are
5 provided for repairing a break in the lens or housing in situ
6 for an automobile light bulb. The kit and method are an
7 inexpensive and labor saving simplification of the prior art
8 complex systems of plastic castings employing gaskets and/or
9 molds or using tapes or overlays.

10 The problems solved by the present invention are to provide a
11 simple, inexpensive repair to an automobile light bulb housing
12 or lens without having to replace the housing. The repairing of
13 the automobile light bulb housing or lens is in situ,
14 maintaining substantially the same light diffusion
15 characteristics of the original lens or housing and maintaining
16 the integrity of the repaired housing with a bulb inside.

17 Brief Description of the Drawing

18 Although such novel feature or features believed to be
19 characteristic of the invention are pointed out in the claims, the
20 invention and the manner in which it may be carried out may be
21 further understood by reference to the description following and
22 the accompanying drawings.

23 Fig. 1 is an elevation of a repair panel of the present

invention.

Fig. 2 is a cut away enlarged right side detail view of Fig. 1.

Fig. 3 is a view of a selection of adhesive gasket strips of the present invention.

Fig. 4 is a cut away enlarged detail right side detail of an adhesive strip of Fig. 3.

Fig. 5 shows measuring the repair panel of Fig. 1 over a broken housing lens of an automobile.

Fig. 6 shows a detail of cutting out the measured panel of Fig. 5 to a size selected to overlap the broken lens.

Fig. 7 shows the cut panel of Fig. 6 with adhesive strips of Fig. 3 adhered at its periphery.

Fig. 8 shows the outer release paper of the adhesive strips being removed to prepare the repair panel for engagement over a selected break in a lens.

Fig. 9 shows repair panel being engaged over a break in a curved lens.

Fig. 10 shows another selected repair panel of the present invention.

Fig. 11 shows another selected repair panel of the present invention.

Fig. 12 shows a detail side view of the repair panel of Fig. 11 including an adhesive layer and release paper.

1 Description of the Figures

2 Referring now to the figures in greater detail, where like
3 reference numbers denote like parts in the various figures.

4 As shown in Fig. 1, the patch system kit includes a repair
5 panel 10. As shown in Fig. 2 in enlarged detail, the repair panel
6 10 has an inner surface 11 and an outer surface 12. The inner
7 surface 11 is flat with ridges 13 protruding outward in lines
8 forming a grid 14. As shown in Fig. 1 the grid 14 is separated
9 into two parts by a border 15

10 As shown in Fig. 3, gasket strips 16 are provided. The gasket
11 strips 16, as shown in Fig. 4 include release papers 17, over
12 adhesive layers 18.

13 As shown in Fig. 5, the repair panel 10 is held over the
14 damaged area 25 of a lens 26. As shown in Fig. 6, the repair panel
15 10 is cut at the border 15 forming a cut panel 19. As shown in
16 Fig. 7 the gasket strips 16 are adhered to the panel 19. As shown
17 in Fig. 8, the outer release papers 17 are removed from the panel
18 19.

19 Fig. 9 shows a cut panel 19 being engaged over a curved lens
20 21. Fig. 10 shows a repair panel 30 with a grid 31 and a clear
21 portion 32.

22 Fig. 11 shows a repair panel 40 with grid 41, a clear portion
23 42, and a selection of round cuts, 43 - 46. Fig. 12 shows the

1 release paper 47 over an adhesive layer 48 on the back of repair
2 panel 40.

3 . Operation

4 In performing a repair, a repair panel 10 is held over a break
5 in a lens or housing as shown in Fig. 5. The panel is cut to
6 overlap the entire damaged area. Where a damaged area is small it
7 may be convenient to cut the repair panel 10 at the border 15 as
8 shown in Fig. 6. The gasket strips 16 are then selected to form a
9 secure atmosphere safe repair.

10 A release paper 17 is removed from one side of a gasket strips
11 16. The gasket strips 16 is applied to the inner surface 11 of the
12 cut panel 19 forming a border as shown in Fig. 7. The release
13 papers 17, as shown in Fig. 8, are removed from the adhesive
14 layers 18 so they can be engaged over the damaged area to effect
15 a complete repair.

16 As shown in Fig. 9, the cut panel 19 with the release paper 27
17 removed, as shown in Fig. 8, is engaged over a break 50 in the
18 curved lens 21. The flexibility of the cut panel 19 enables a
19 liquid type seal effecting the perfect repair.

20 The repair panels 30 and 40, with the adhesive layer 48 on the
21 back of each available, to be cut and molded over cracks, breaks
22 in lenses, such as lenses 21 and 26. The selected configuration of
23 color and ridges for the deflection of light is selected and

